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Authors' Affiliation:

¹Associate Professor Ph.D scholar, Dr. D.Y Patil College of Physiotherapy, Dr. D.Y. Patil Vidhyapeeth, Pimpri, Pune, Maharashtra, India.

Email: Mrudula.sangaonkar@gmail.com; Orcid ID:0000-0002-4912-8596.

²Professor, Dr. D.Y Patil College of Physiotherapy, Dr. D.Y. Patil Vidhyapeeth, Pimpri, Pune, Maharashtra, India.

Email: Gaurang.baxi@dpu.edu.in; Orcid ID: 0000-0003-3237-3664

³Assistant Professor, Dr. D.Y Patil College of Physiotherapy, Dr. D.Y. Patil Vidhyapeeth, Pimpri, Pune, Maharashtra, India.

Email: om.wadhokar@dpu.edu.in; Orcid ID: 0000-0002-6336-6400.

⁴Professor, Department of Radiology, Dr. D.Y Patil Medical College, Dr. D.Y. Patil Vidhyapeeth, Pimpri, Pune, Maharashtra, India.

Email: amit.kharat@dpu.edu.in; Orcid ID: 0000-0002-4689-6629.

⁵Professor and Principal, Dr. D.Y Patil College of Physiotherapy, Dr. D.Y. Patil Vidhyapeeth, Pimpri, Pune, Maharashtra, India.

Email: tusharjpalekar@gmail.com; Orcid ID: 0000-0001-9931-4023.

⁶Intern, Dr. D.Y Patil College of Physiotherapy, Dr. D.Y. Patil Vidhyapeeth, Pimpri, Pune, Maharashtra, India.

Email: mansisonpatki@gmail.com; Orcid ID: 0009-0003-7927-0643

⁷Intern, Dr. D.Y Patil College of Physiotherapy, Dr. D.Y. Patil Vidhyapeeth, Pimpri, Pune, Maharashtra, India.

Email: sandhyatowar@gmail.com; Orcid ID: 0009-0001-7642-6900.

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Effect of Matrix Rhythm Therapy on adhesive capsulitis of shoulder: A case report

Mrudula Sangaonkar¹, Gaurang Baxi², Om Wadhokar³, Amit Kharat⁴, Tushar J Palekar⁵, Mansi Sonpatki⁶, Sandya Towar⁷

ABSTRACT

Frozen shoulder is one of the commonest conditions seen on individuals between 40-60 age group, there is formation of adhesion in the dependent folds of the capsule causes restriction in the range of motion. The diseases are characterised by presence of dull pain around the shoulder joint and gradual reduction in the range of motion with difficulty in the overhead activities. Matrix Rhythm Therapy is a latest advancement in the physical therapy it reactivates the cell metabolism by vibrating the tissue between 8-12 MHz frequency. Here we are presenting a 59 years old male presented with complaints of reduced range of motion and pain around the shoulder joint and complaints of difficulty in grooming and difficulty and pain in the shoulder while reaching the back pocket for which he was taking pain medication as the pain did not subside so he visited the OPD for further management. He was treated with Matrix Rhythm Therapy and Mulligan joint mobilization followed by hot fermentation and Exercises. We conclude that the pain symptoms have relieved significantly and improved overall condition of the individuals. However, the study can be done to assess the effect of matrix rhythm therapy and joint mobilization in individuals with Adhesive Capsulitis.

Keywords: Adhesive Capsulitis, Matrix Rhythm Therapy, Case Report.

1. INTRODUCTION

Frozen shoulder is a commonest condition seen in adults and after a long period of immobilization or secondary to any fracture. The condition is characterised by fibrosis of the fibroproliferative tissue. The type I and type II collagen formed by fibroblast is then transformed to myofibroblasts with is accompanied by inflammation, neoangiogenesis and neoinnervation causing capsular contracture around the shoulder joint (Brun, 2019). Current treatment options available for frozen shoulder are physiotherapy, steroid injection, anti inflammatory medication and surgical intervention (Kabbabe et al., 2010; Millar et al., 2022; Phansopkar and Qureshi, 2022). Matrix rhythm therapy (MRT) is a new treatment approach used for the treatment of various

neurologic and orthopedic conditions it is a vibromassage therapy. These vibrations are used to retain normal vibrational frequency of skeletal muscles and nervous systems. Few studies published stated the effectiveness of matrix rhythm therapy (MRT) in improving overall conditions of the individuals (Taspinar et al., 2013). Mulligan joint mobilization is a technique used for improving joint range, breaking adhesions and alleviating pain by stimulating the mechanoreceptor is the soft tissue which inhibits the pain gait and reduces pain of the individual (Özcan et al., 2021; Naik et al., 2018).

2. PATIENT AND OBSERVATION

A patient in this a 59-year-old male, residing in Pimpri Chinchwad who has been complaining of pain over anterior, posterior and laterally on right shoulder along with difficulty in forward backward and over head activities since 2 months. He is experiencing difficulty in lying on involved side, removing something from back pocket and also combing hair. The pain is insidious in onset and gradually progressive in nature with an intensity of 9/10 on NPRS (numerical pain rating scale). It is dull aching in nature and gets aggravated by over head activities and relieved by rest and medication. He was a known case of diabetes mellitus since 10 years and regularly taking the medicines for the same. The patient is shopkeeper by the occupation and works for approximately 10 hrs a day Patient needs to do over head shoulder activities frequently in day which aggravates the pain. For now, he is diagnosed with the secondary adhesive capsulitis stage 3 of right shoulder and he is taking physiotherapy treatment for the same.

Physical Examination

The patient was assessed with left shoulder depressed with thoracic kyphosis. On general examination the patient vital signs were normal: A febrile fever, PR 78 beats/min, respiratory rate 18 breaths/min, blood pressure 126/80 mmHg. On palpation grade II tenderness was present over the anterior aspect of the left shoulder with mild warmth present over the left shoulder. All sensations were intact with no neurological involvement. The posture of the patient is shown in (Figure 1). Range of motion and strength assessment of the left shoulder is mentioned in the (Table 1). Range of motion and strength for left elbow, wrist and right upper limb is full and functional (Figure 2).



Figure 1 Showing the Posture of the Patient.

Table 1 Range of motion and manual muscle testing for left shoulder.

Shoulder joint	Left shoulder Range of motion	Manual Muscle Testing
Flexion	0-100 degree	4+
Extension	0-20 degree	4+
Abduction	0-85 degree	4+

Internal rotation	0-45 degree	4+
External rotation	0-25 degree	4-



Figure 2 Showing Range of Motion Assessment.

Diagnostic Assessment

Numerical Pain Rating Scale (NPRS)

On activity - 9 /10; On rest – 6/10

Shoulder Pain and Disability Index (SPADI)

To assess shoulder pain and difficult in performing ADLs. The pre rehabilitation score for pain was 80% ($40/50 \times 100 = 80\%$). The total disability score for disability prior to rehabilitation was 75% (Total disability score - $60/80 \times 100 = 75\%$). The total score for SPADI was 76.92% ($100/130 \times 100 = 76.92\%$).

Diagnosis

A 59 yr old male diagnosed with the adhesive capsulitis stage 3 of right shoulder as he complains pain over anterior, posterior and laterally on right shoulder along with difficulty in forward backward and over head activities.

Therapeutic Intervention

Education regarding the condition and course of the condition and importance of physiotherapy and lifestyle modification were explained to the patient. The management protocol is mentioned in the (Table 3).

Table 3 Management protocol

Intervention	Dosage	Rationale
Matrix Rhythm Therapy (MRT) (Figure 3)	Mild intensity for 40 minutes with 8 Hz frequency	To correct the vibration frequency of the cells and break adhesion formed in the capsule and muscles
Hot Fermentation	10 Minutes prior to the treatment	To induce relaxation and make soft tissue more pliable
Capsular Stretches	3 Repetition 30 seconds hold	To break adhesion and improve the flexibility of capsule

Codman's Exercises	10 Repetitions with 1 kilogram weight	To increase Range of Motion of the joint by Pendular movement
Strengthening Exercises (with red theraband)	10 Repetitions 10 seconds hold	To strengthen the rotator cuff muscle and improve range and reduce pain
Mulligan joint mobilization	12 Oscillation per minute	To break adhesion and improve range of motion



Figure 3 Application of Matrix Rhythm Therapy

Follow Up and Outcome: After 2 weeks

Individual presented with significant improvement in the range of motion of the affected shoulder and improved functional capacity and pain (Table 4, 5 and Figure 4).

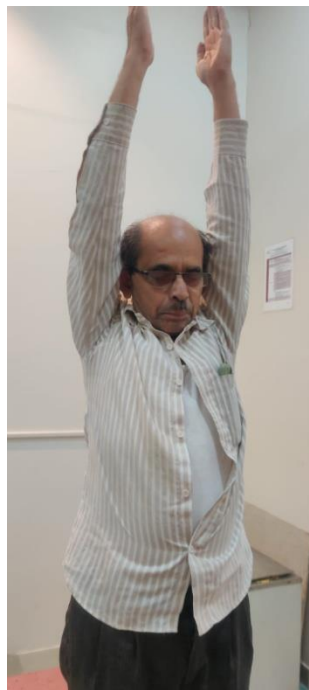


Figure 4 Post treatment ROM assessment

Table 4 Pre and Post Range of Motion

Shoulder joint	Pre-ROM	Post - ROM
Flexion	100 degree	150 degree
Extension	20 degree	50 degree
Abduction	85 degree	140 degree
Adduction	85-0 degree	140-0 degree
Internal rotation	45 degree	60 degree
External rotation	25 degree	70 degree

Table 5 Pre and post, NPRS and SPADI score.

Outcome	Pre	Post
Numerical Pain Rating Scale	9/10 (on Activity) 6/10 (on rest)	4/10 (On Activity) 1/10 (At Rest)
SPADI	76.92%	30%

3. DISCUSSION

A study was conducted to assess the effect of matrix rhythm therapy in pain, level of disability and quality of life in individuals with chronic low back pain. One group received conventional physiotherapy consisting of hot fermentation and exercises therapy while other group received MRT along with conventional physiotherapy and the outcome used were McGill pain questionnaire for pain and Oswestry Disability Index for lower back disability assessment and SF36 short form for the assessment of quality of life the study concluded that MRT provide significant improvement in the pain, disability and quality of life (Akbar et al., 2019; Özcan et al., 2021). Other case study find out the effectiveness of MRT in individuals suffering from pronator teres syndrome the case study found that after application of vibromassage using MRT has significantly improved Range of motion and released adhesion formed around the median nerve and relieved the symptoms. Other case report found out the effect of MRT on pes anserine bursitis which showed a reduction in the pain, adhesion and improved range of motion in the individual (Patil et al., 2021).

4. CONCLUSION

We conclude that a tailored physical therapy regimen consisting of Martix Rhythm Therapy, Mulligan Joint Mobilization helped to improve the range of motion by breaking adhesions and reducing pain by stimulation of the mechanoreceptor. The exercise protocol helped maintain the strength and endurance of the global and local muscles required for normal scapula humeral rhythm. however further study should be conducted to isolate the individual effect of MRT and Joint Mobilization.

Informed Consent

Informed oral Consent was obtained from the individual.

Author's Contribution

All Author's Contributed Equally in drafting the manuscript.

Competing Interests

None

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Conflict of interest

The authors declare that there is no conflict of interests.

Ethical approval

Not applicable.

Data and materials availability

All data sets collected during this study are available upon reasonable request from the corresponding author.

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